8-6. Write the area of the rectangle below as a sum and as a product.

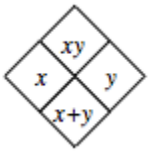
$-3x$	$-6y$	12
$2x^2$	$4xy$	$-8x$

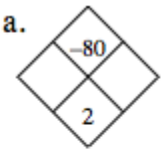
- **8-7.** Multiply the expressions below using a generic rectangle. Then verify Casey's pattern (that the product of one diagonal equals the product of the other diagonal).

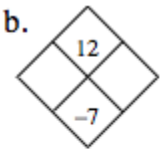
  a. $(4x - 1)(3x + 5)$

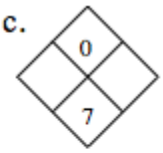
  b. $(2x - 7)^2$

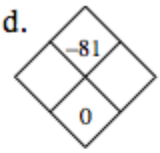
8-9. Remember that a Diamond Problem is a pattern for which the **product** of two numbers is placed on top, while the**sum** of the same two numbers is placed on bottom. (This pattern is demonstrated in the diamond below.) Copy and complete each Diamond Problem below.

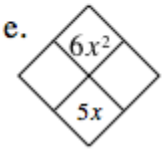


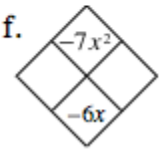
a.


b.


c.


d.


e.


f.


8-10. In a previous course you used the Distributive Property and common factors to change expressions written as sums into expressions written as products. For example:

- Since 6 is the greatest common factor of both terms, $12x + 18$ may be rewritten:
- Here x is a common factor of every term, so $x^2 + xy + x$ may be rewritten:
  $x^2 + xy + x = x(x + y + 1)$.
- Use the greatest common factor to rewrite each sum as a product. Homework Help ✎

  a. $4x + 8$

  b. $10x + 25y + 5$

  c. $2x^2 - 8x$

  d. $9x^2y + 12x + 3xy$

8-11. On graph paper, graph $y = x^2 - 2x - 8$. 8-11 HW eTool(Desmos). Homework Help ✎

a. Name the y-intercept. What is the connection between the y-intercept and the rule $y = x^2 - 2x - 8$?

b. Name the x-intercepts.

c. Find the lowest point of the graph, called the vertex.

8-12. Calculate the value of each expression below. Homework Help ✎

a. $5 - \sqrt{36}$

b. $1 + \sqrt{39}$

c. $-2 - \sqrt{5}$